SFG 2023 | LEVEL 1 | Test #35 – Solutions | ForumIAS

Q.1) The Nagara, the Dravida and the Vesara are the:
a) three main racial groups of the Indian subcontinent
b) three main linguistic divisions into which the languages of India can be classified
c) three main styles of Indian temple architecture
d) three main musical Gharanas prevalent in India

Ans) c
Exp) Option c is the correct answer.
Three main styles of **temple architectur**e are the Nagara or the Northern style, the Dravida or the Southern style and the Vesara or Mixed style.
Source: UPSC 2012

Q.2) With reference to the art and archaeological history of India, the construction of which of the following began the earliest?
a) Sultanganj Buddha statue
b) Pandav-leni caves at Nashik
c) Ravana shaking Mount Kailash at Ellora caves
d) Boar incarnation at Udayagiri caves

Ans) b
Exp) Option b is the correct answer.
Option a is incorrect: The **Sultanganj Buddha belongs to 500 AD to 700 AD.** It is one of the largest Buddha sculptures found in India. It is the finest example of **Sarnath School of Sculpture** and belongs to the **Gupta – Pala transitional period (500 AD to 700 AD).**
Option b is correct: Pandav-leni caves were developed around the 1st century A.D. and belong to the Hinayana period and later, the idols of Buddha were also carved inside these caves representing influence of Mahayana Buddhism. These caves are located on the Trirasmi hill at the outskirts of Nashik city. Most of the caves have the magnificent idols of **Buddha and the popular Jain Tirthankaras.**
Option c is incorrect: The depiction of **Ravana Shaking Mount Kailash is depicted in Ellora caves**. It was developed during the **reign of Rashtrakuta rulers in 7th century A.D.** Ellora is a famous cave located in the Aurangabad district of Maharashtra, India. It is one of the UNESCO World Heritage Sites in India.
Option d is incorrect: Udayagiri caves is located in **Vidisha, Madhya Pradesh and it was developed in** early **5th century AD** under the patronage of **Chandragupta II.** These cave hosts the **sculpture of Varaha or Boar incarnation of the Vishnu dated to 5th century AD.**
Source: Nitin Singhania: Chapter-Indian Art and Architecture

Q.3) With reference to Pottery work in ancient India, consider the following statements:
1. Earliest evidence of pottery in India was found from the Chalcolithic period.
2. Painted Grey Ware pottery is associated with the Vedic period.
3. Northern Black Polished Ware is linked with beginning of second urbanization in India.
Which of the statements given above is/are correct?
a) 1 and 2 only
b) 2 and 3 only
c) 3 only
d) 1, 2 and 3

Ans) b

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Exp) Option b is the correct answer.

Pottery has been known as the 'Lyric of handicrafts. Making objects out of clay has been one of the earliest crafts begun by man.

Statement 1 is incorrect: The earliest evidence of pottery appeared in Mesolithic **period and not chalcolithic period in India.** The remnants show that the art of clay pottery making was highly developed in 6000 B.C.

Statement 2 is correct: Painted Grey Ware pottery, which is typically grey in colour and was related to Vedic period (1500-600 B.C.). It is characterized by a style of fine, grey pottery painted with geometric patterns in black. The PGW culture is associated with village and town settlements, domesticated horses and ivory-working.

Statement 3 is correct: Northern Black Polished Ware or NBPW phase marked the beginning of the second urbanization in India. Second urbanization means the emergence of sixteen Mahajanapadas from Janapadas in the period of 500 to 600 B.C. in the Indian subcontinent. This period saw agricultural improvements in middle of Gangetic plains.

Source: Nitin Singhania, Indian Handicrafts

Q.4) Consider the following pairs with reference to the wooden crafts in different parts of India:

Wooden craft	**Description**
1. Khatamband	It is a method to manufacture idols and products related to religious purposes.
2. Sikki Grass craft	It is used to make ornaments, boxes and the containers.
3. Khunda	It is a wooden staff used for walking as well as a weapon.
4. Sankheda	It is a teakwood furniture having abstract designs and floral paintings drawn over it.

How many of the pairs given above are correctly matched?

a) One pair only
b) Two pairs only
c) Three pairs only
d) All four pairs

Ans) c

Exp) Option c is the correct answer.

Pair 1 is incorrect: Khatamband is an art of making ceiling, by fitting small pieces of wood (preferably walnut or deodar wood) into each other in geometrical patterns. The process is not done through machines but is painstakingly hand crafted and that too without using any nails. It has been given geographical indication tag. Whereas Santalum, Sandal woodcarving Karnataka is mainly used to manufacture idols and products related to religious purposes.

Pair 2 is correct: Sikki Grass craft of Bihar is used to make ornaments, boxes and the containers to store rice, grains and lentils, etc.

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Pair 3 is correct: Khunda Bamboo staves are made in Punjab. It is used as an essential part of Bhangra dance. This iron tipped staves serve the purpose of a walking aid and weapon.
Pair 4 is correct: Sankheda Furnitures are made in Gujarat. It is made of 100 percent seasoned teak wood. It has Abstract designs and floral paintings drawn on wooden furniture with bright shades of gold, silver, maroon, green, vermilion and brown. It has been given Geographical Indication (GI) tag.
Source: Nitin Singhania, Indian Handicrafts

Q.5) Consider the following statements regarding the International Liquid Mirror Telescope:
1. It is the world's first liquid mirror telescope commissioned for astronomy.
2. It is a joint initiative of NASA and ISRO.
3. The telescope uses low melting alloys of gallium as the reflective liquid.
4. It is a stationary telescope and does not revolve around a particular object like Earth or the Sun.
Which of the statements given above is/ are correct?
a) 1, 2 and 3 only
b) 1 and 4 only
c) 3 and 4 only
d) 1 only

Ans) b
Exp) Option b is the correct answer.
The International Liquid Mirror Telescope is **commissioned at Devasthal, Uttarakhand** aims to identify transient or variable objects **like supernovae, gravitational lenses, space debris, and asteroids**. It is, also, **India's first liquid telescope and the largest in Asia.**
Statement 1 is correct: The International Liquid Mirror Telescope (ILMT) has been **commissioned exclusively for the astronomy**. It is the **world's first telescope** of this purpose. Other previous liquid telescopes were built to track satellites or for military purposes.
Statement 2 is incorrect: The telescope is located in at the Devasthal Observatory campus of **Aryabhatta Research Institute of Observational Sciences (ARIES),** an autonomous institute under the Department of Science and Technology (DST), Govt. of India. ILMT project results from a **collaboration between** Aryabhatta Research Institute of Observational Sciences (**ARIES, India**), the **Institute of Astrophysics and Geophysics (Liege University**), the **Canadian Astronomical Institutes**, **University of Montreal, University of Toronto, York University, University of British Columbia and Victoria University**. Hence, the given statement is incorrect.
Statement 3 is incorrect: The instrument has a 4-meter diameter rotating mirror made up of thin film of **liquid mercury** to collect and focus light. Gallium can also be used as a reflective material, but in ILMT, mercury has been used.
Statement 4 is correct: This telescope does not revolve around any particular object like Earth or the Sun. It is **stationary** and located at an altitude of 2450 meters at the Devasthal Observatory campus of Aryabhatta Research Institute of Observational Sciences (ARIES).
Source: https://pib.gov.in/PressReleasePage.aspx?PRID=1830501

Q.6) Which of the following are the architectural features first introduced by the Mughals in India?
1. Use of double domes in buildings.
2. Use of minars around the Mosques.
3. Use of Pietra Dura
4. Use of grey sandstone
5. Use of Charbagh style in buildings.

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Select the correct answer using the code given below:
a) 1, 3 and 5 only
b) 1 and 5 only
c) 3 and 5 only
d) 2, 3 and 4 only

Ans) c
Exp) Option c is the correct answer.
The Mughals were great patrons of art and architecture. Under them, architecture regained its place of importance, as new buildings were built with great vision and artistic inspiration.
Option 1 is incorrect: One important feature of architecture during this Lodhi period was the **introduction of double domes.** It consisted of a hollow dome inside the top dome.

ig. 1.43: *Qutb minar and Alai Darwaza, Delhi*

Fig.1.44: *Double dome architecture*

Option 2 is incorrect: The Slave dynasty which remained in power from 1206 to 1290 A.D. introduced the **use of minars** around the mosques and the mausoleums. **E.g., Qutub Minar**.
Option 3 is correct: The art of Pietra Dura, as it was called in Italy, **was brought to India in the 17th century by the Mughal emperor Shah Jahan. H**e commissioned the Taj Mahal and brought experts from Persia, introducing the art of inlay carving and use of semi-precious stone in marble for the first time.
Option 4 is incorrect: Grey Sandstone was in use since ancient period. Gandhar School of Sculpture used Grey Sandstone.
Option 5 is correct: The Charbagh style was introduced by the Mughals to India. Charbagh or Chahar Bagh is a garden divided by walkways or flowing water into **four smaller parts.** It was used extensively in India after the **arrival of the Mughals in India.** For example, **the Taj mahal built by Shah Jahan used this layout.**
Source: Nitin Singhania: Chapter-Indian Architecture
https://egyankosh.ac.in/bitstream/123456789/20281/1/Unit-33.pdf (pg no 35)

Q.7) With reference to the Khajuraho Group of temples, consider the following statements:
1. It was built by the rulers of the Chalukya dynasty.
2. It is located in the Malwa plateau region of Madhya Pradesh.
3. These temples belong to both Hindu and Jain religions.
4. Chaturbhuja Temple here does not have any erotic sculpture.
Which of the statements given above are correct?
a) 1 and 4 only
b) 1, 2 and 3 only
c) 3 and 4 only
d) 2, 3 and 4 only

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Ans) c

Exp) Option c is the correct answer.

The Khajuraho group of temples feature Nagara-style architectural symbols. They are best known for the erotic sculptures that adorn the temple walls.

Statement 1 is incorrect: The temples at Khajuraho were built by the **Chandela dynasty,** which reached its zenith between **950 and 1050 AD.** These Temples got the status of UNESCO's World Heritage Sites in 1986.

Statement 2 is incorrect: The temple site is situated in the **Bundelkhand region** of Madhya Pradesh. Khajuraho is in the **Chhatarpur district** of Madhya Pradesh. The temples are famous for their Nagara-style architectural symbolism.

Statement 3 is correct: These temples belong to **two different religions – Hinduism and Jainism**. These temples were built on relatively high platforms and currently, only about 20 temples remain.

Statement 4 is correct: Khajuraho temple are famous for their erotic sculptures. However, **Chaturbhuja Temple is the only temple in Khajuraho that does not have a single erotic sculpture.** The **sculpture** of **Lord Vishnu** that seems as if the god is about to step out and bless his devotees is a notable sculpture of this temple.

Source: https://www.mptourism.com/destination-khajuraho.php
https://whc.unesco.org/en/list/240/

Q.8) With reference to the cultural history of India, the terms Sandhara, Nirandhara and Sarvatobhadra refers to:

a) Sects of Buddhism
b) Type of shrines in temples
c) The religious ceremonies hosted by king
d) Songs composed by Bhakti poets

Ans) b

Exp) Option b is the correct answer.

Option a is incorrect: The religion of Buddhism can be broken down into **three major sects**. They are **Theravada Buddhism, Mahayana Buddhism, and Vajrayana Buddhism.** There are many subsects of Buddhism within these major sects.

Option b is correct: During the ancient period, each temple had a principal image of a god. The shrines of the temples were of three kinds– **sandhara type-** a temple **without pradikshinapatha**, **nirandhara type-** a temple **with pradakshinapatha** and **sarvatobhadra- a temple** which can be **accessed from all sides**.

Option c is incorrect: During ancient and medieval times, the **Kings** in India perform many **religious rituals to enhance their legitimacy.** One such example is **Ashvamedha** (horse sacrifice).

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Option d is incorrect: The **Bhakti movement** sought to bring religious reforms to all sections of society by adopting the **method of devotion to achieve salvation**. Bhakti literature includes the writings of the Alvars and Nayanars.
Source: https://ncert.nic.in/textbook/pdf/kefa106.pdf (pg no 69)

Q.9) With reference to the Buddhist architecture in India, consider the following statements:
1. Chaitya is a place of worship while Vihara is the dwelling place of the monks.
2. Stupas were constructed solely by the Kings whereas Viharas were constructed solely by the monks.
3. Adholoka Maha Chaitya was recently unearthed in the region of Karnataka.
Which of the statements given above is/are correct?
a) 1 only
b) 2 and 3 only
c) 1 and 3 only
d) 1, 2 and 3

Ans) c
Exp) Option c is the correct answer.
Due to the popularity of Buddhism and Jainism, stupas and viharas were constructed on a large scale in ancient India.
Statement 1 is correct: Vihara is a dwelling place where the Buddhist monks resided and meditated whereas **chaitya refers to a shrine or prayer hall** in the Buddhism.
Statement 2 is incorrect: Both the Stupas and Viharas were constructed by the Kings, common people and monks. There are many **inscriptions** which show that the stupas were built by **persons other than kings such as traders and artisans' categories** like stone carvers, goldsmiths, stone-polishers, carpenters.
Statement 3 is correct: Archaeological Survey of India (ASI) recently excavated **Adholoka Maha Chaitya** on the bank of **Bhima River near Kanaganahalli in Kalaburagi district**, **Karnataka.** It is believed to have been developed in three constructional phases – **Maurya, Early Satavahana and Later Satavahana periods stretching from 3rd Century B.C. to 3rd Century A.D.**
Source: NCERT Class XII: Fine arts - Chapter 3
https://www.thehindu.com/news/national/karnataka/sannati-ancient-buddhist-site-finally-in-focus-after-20-years/article65619746.ece

Q.10) Consider the following statements regarding Web 3.0:
1. It gives control over data ownership and data monetization to the users.
2. Sending a bitcoin directly to another person is an example of Web 3.0.
3. Telangana Government has officially launched the Web 3.0 Regulatory Sandbox.
Which of the statements given above are correct?
a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) 1, 2 and 3

Ans) d
Exp) Option d is the correct answer.
Web 3.0 is the third generation of the world wide web. It is characterized by **decentralization, trust-lessness, permission-lessness, ubiquity, connectivity, machine learning and artificial intelligence**.

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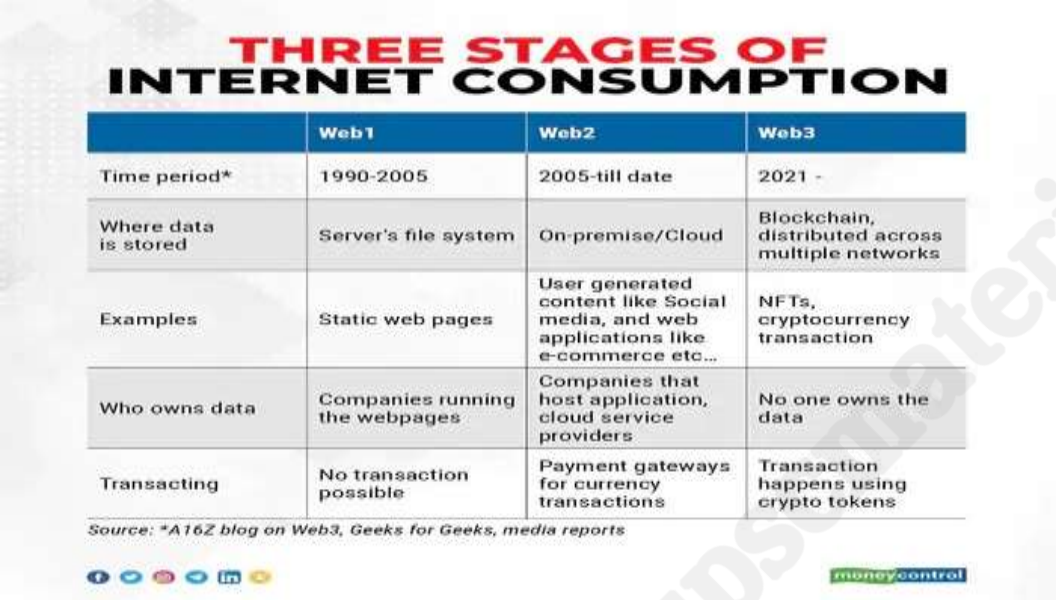
Statement 1 is correct: Web 3.0 operates on the principle of decentralization. This means **no permission is needed from a central authority to post anything** on the web. It has no central controlling node and also no single point of failure. In other words, Web 2.0 apps like YouTube, Meta etc. are owned by their parent company which also acts as a central node. Web 3.0 facilitates **complete user-to-user interaction with no interference of the platform.** Thus, Web 3.0 allows users control, own and even monetize their own data. This encourages individuals to decide how they want to collect, store and sell their data.

Statement 2 is correct: Web 3.0 operates on the principle of trust lessness- which means interactions and transactions can take place between two parties **without any need for a trusted third party.** Hence, sending a bitcoin directly to another person- not via an online exchange or wallet stored on a centralized server-is an example of Web 3.0.

Statement 3 is correct: Telangana Government has officially launched Web 3.0 regulatory sandbox to allow local and international firms or innovators to test their products in a 'live' environment. Innovations that can be tested include new products, services, solutions, business models, and even policies. It will also help regulators to identify the regulatory barriers to beneficial innovation.

Knowledge Base: Key differences between Web 1.0, Web 2.0 and Web 3.0:



(Source: Money Control)

Source: https://www.forbes.com/sites/bernardmarr/2022/01/24/what-is-web3-all-about-an-easy-explanation-with-examples/?sh=730e6a502255

https://it.telangana.gov.in/telangana-officially-launched-the-web-3-0-regulatory-sandbox/

https://blog.forumias.com/web-3-0-the-future-of-internet-explained-pointwise/

Q.11) With reference to the history of Indian rock-cut architecture, consider the following statements:

1. The caves at Badami are the oldest surviving rock-cut caves in India.
2. The Barabar rock-cut caves were originally made for Ajivikas by Emperor Chandragupta Maurya.
3. At Ellora, caves were made for different faiths.

Which of the statements given above is/are correct?

a) 1 only
b) 2 and 3 only
c) 3 only
d) 1, 2 and 3

Ans) c

Exp) Option c is the correct answer.

Statements 1 and 2 are incorrect. Not Badami, **Barabar** caves are the oldest surviving rock-cut caves in India.

Barabar caves were built by King Ashoka and not Chandragupta Maurya. These caves were used by ascetics from Ajivika sect.

Statement 3 is correct. Unlike Ajanta, Ellora caves were made for different faiths. Buddhist, Jain and Hindu mythology are represented at Ellora caves.

Source: UPSC 2013

Q.12) In this sun temple, during the summer solstice, the sun rays fall directly above the temple at noon casting no shadow. This Sun Temple is located exactly on the Tropic of Cancer. This ensures that, on equinoxes, the first rays of the sun always fall at the deity's feet in the inner sanctum.

Which of the following sun temples best reflects the features mentioned above?

a) Sun Temple of Modhera

b) Konark Sun Temple

c) Sri Surya Pahar in Assam

d) The Sun temple of Gwalior

Ans) a

Exp) Option a is the correct answer.

A Solar or Sun temple is a building or structure **dedicated to worshiping the Sun God, Surya**. It is also referred to as the Surya Mandir in India.

Option a is correct: The **Sun Temple of Modhera** is a Hindu temple dedicated to the solar deity **Surya** located in **Gujarat**. The sanctum sanctorum is designed in a way that the first rays of rising **sun lit up the image of Surya during solar equinox days. O**n **summer solstice day**, the sun shines **directly above the temple at noon casting no shadow. This Sun Temple is located exactly on the Tropic of Cancer**. This ensures that, on equinoxes, the first rays of the sun always fall at the deity's feet in the inner sanctum.

Option b is incorrect: Konark Sun Temple is a Hindu temple dedicated to the Hindu Sun God **Surya** located in Puri district, **Odisha**. The temple is oriented towards the east so that the **first rays of the sunrise strike the main entrance.**

Option c is incorrect: Sri Surya Pahar is a Hindu temple dedicated to the Hindu Sun God Surya located in Goalpara, **Assam**. It is an archaeological site situated at the **banks of river Brahmaputra.**

Option d is incorrect: The Sun temple, Gwalior is a Hindu temple dedicated to the solar deity Surya located in **Morar, Madhya Pradesh**. These sun Temple takes its **inspiration from the famous Konark Sun Temple in Orissa.**

Source: https://timesofindia.indiatimes.com/travel/destinations/did-you-know-about-these-incredible-facts-about-gujarats-modhera-sun-temple/articleshow/77765353.cms
https://gwalior.nic.in/en/tourist-place/sun-temple/
https://odishatourism.gov.in/content/tourism/en/discover/attractions/temples-monuments/konark.html
https://www.tourmyindia.com/states/assam/sri-surya-pahar.html

Q.13) Consider the following statements:

1. Soft soapstone was the main building material.
2. Shrines are laid in the shape of a star.
3. Roofs of the temples were never sloping or slanting.

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4. Temples were built on a highly raised platform.
Which of the above are the features of the Hoysala temple architecture?
a) 1, 2 and 3 only
b) 1, 2 and 4 only
c) 3 and 4 only
d) 2 and 4 only

Ans) b
Exp) Option b is the correct answer.
In the region of **Karnataka near Mysore**, the temples built under the **Hoysala rulers** (1050-1300 A.D) developed a distinct style of their own known as the **Hoysala School of art.** Its prominent seats being Belur, Halebid and Sringeri.
Option 1 is correct: In the temples of Hoysala dynasty, soft soap stone (Chorite schist) was the main building material.
Option 2 is correct: Unlike the crucified ground plan (plan that resembles the crucifixion cross) of the **Panchayatan style**, the **Hoysala** school of architecture **laid shrines in the shape of an intricately designed star.** This was known as the **Stellate plan.**
Option 3 is incorrect: In Hoysala architecture, roofs slope inwards to converge at the top.

Fig. 1.35: *Chennakesava temple, Somanathapura*

Option 4 is correct: The temples were **built on an upraised platform known as Jagati,** which was about **one metre high.**
Source: Nitin Singhania: Chapter- Indian Architecture

Q.14) With reference to the various sculptures of Indus Valley Civilisation, consider the following pairs:

Sculptures	**Found in**
1. Bronze statue of Dancing girl	Harappa
2. Pasupathi seal	Mohenjo-daro
3. Terracotta figure of horse	Lothal
4. Large wooden sign board	Dholavira

How many pairs given above are correctly matched?
a) only one pair
b) only two pairs
c) only three pairs
d) All the four pairs

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Ans) c

Exp) Option c is the correct answer.

The Indus Valley Civilisation, also known as the Harappan Civilisation was a **Bronze Age civilisation.**

Pair 1 is incorrect: The sculptures found in the Harappa were s**tone symbols of lingam,** mother goddess figure, wheat and barley in wooden mortar and **the sculpture of a dog chasing a deer in bronze metal**, and a red sandstone male torso. Harappa is in **present Pakistan on the bank of River Ravi.**

Bronze style of dancing girl was found at Mohenjo-Daro.

Pair 2 is correct: The sculptures found in the Mohenjo Daro were the sculpture of a bearded **priest, the famous bronze statue of the Dancing Girl and the Pashupati seal.** Mohenjo-Daro is in present-day Pakistan on the bank of River Indus.

Pair 3 is correct: The terracotta figures of horse and ship were found in the **Lothal, Gujarat.** It is an important site fo**r naval trade and it had a Dockyard. P**ractice of burial of cremated remains, rice husk, fire altars, painted jar, instruments for measuring 45-, 90- and 180-degree angles were founded here.

Pair 4 is correct: Dholavira in Gujarat had a **large wooden signboard** just outside the north entrance to the citadel. There are 10 symbols in the panel and it is considered one of the longest Indus inscriptions. Also, it has a **giant water reservoir**, unique water harnessing system, stadium, dams and embankments.

Source: Nitin Singhania: Chapter -Indian architecture

Q.15) Consider the following paragraph:

"This process involves transplantation, implantation or infusion of live cells, tissues or organs from non-human animal source into a human recipient. Since decades, doctors attempted transplants of kidneys, hearts, and livers from baboons and chimpanzees (humans' closest genetic relatives) into people. But the organs failed within weeks, if not days, due to rejection or infection. In 2022, first successful transplantation of a pig heart into human heart was performed. The patient had died two months after the experiment".

Which of the following options correctly describes the above transplantation process?

a) Autotransplantation
b) Allotransplantation
c) Isotransplantation
d) Xenotransplantation

Ans) d

Exp) Option d is the current answer.

Globally, there is an acute shortage of organs to treat diseases related to heart, lungs, liver, kidneys etc. Experiments are being conducted to transplant animal cells, tissues, organs etc. into humans. In 2022, first successful transplantation of a pig heart into a human was carried out. The patient died after two months.

Option a is incorrect: Autotransplantation is the transplantation of organ, tissues or particular proteins from one part of the body to another of the same person.

Option b is incorrect: Allotransplantation is the transplantation of cells, tissues or organs from a genetically non-identifiable donor of the same species. This is also known as allograft, allogeneic transplant or homograft.

Option c is incorrect: Isotransplantation is also known as syngeneic transplantation. In this process, cells, tissues or organs are transferred between genetically identical animals or people. For example, transfer of organ between identical twins.

Option d is correct: Xenotransplantation is known as the process of transplanting non-human cells, tissues or organs into human beings. **In 2022, a pig heart has been successfully transplanted into a human being**. There are certain hurdles like **transmission of endogenous viruses or other porcine diseases** into the recipient. There are high chances **of organ rejection**.

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Pig organs are generally preferred, as these animals are anatomically and physiologically similar to humans, can be subject to strict veterinary control and are genetically modifiable to reduce the risk of immune rejection.
Source: https://www.thehindu.com/sci-tech/science/us-man-who-got-first-pig-heart-transplant-dies-two-months-after-surgery/article65208441.ece

Q.16) With reference to the Yaksha/Yakshini sculpture, consider the following statements:
1. Yaksha and Yakshini statues can be found only in the sitting position.
2. The Yaksha/Yakshini sculpture of Mauryan period had round face and shiny surface.
3. The Yaksha/Yakshini sculpture were related to Hinduism, Buddhism and Jainism.
4. The Didarganj Yakshini belongs to the period of Gautama Buddha.
Which of the statements given above are correct?
a) 1, 2 and 3 only
b) 1 and 4 only
c) 2 and 3 only
d) 2, 3 and 4 only

Ans) c
Exp) Option c is the correct answer.
Yaksha and Yakshi were two of the important sculptures of the ancient period. They were related to all three religions – Jainism, Hinduism, and Buddhism.
Statement 1 is incorrect: During the Mauryan period, these monumental sculptures of Yaksha/Yakshini are mostly in the **standing position**. Large statues of Yakshas and Yakshini's are found at many places like Patna, Vidisha and Mathura.
Statement 2 is correct: One of the distinguishing elements in all these images of Mauryan Period is their polished surface. The depiction of faces is in full round with pronounced cheeks and physiognomic detail.
Statement 3 is correct: Yaksha and Yakshi were objects of worship of all the three religions – Jainism, Hinduism and Buddhism. The earliest mention of Yakshini can be found in **Silappadikaram, a Tamil text**. Similarly, all of the Jain tirthankaras were associated with a Yakshi.
Statement 4 is incorrect: The Didarganj Yakshini is one of the **finest examples of very early Indian stone statues**. It used to be dated to the **3rd century BCE,** as it has the fine **Mauryan polish associated with Mauryan art.** The Didarganj Yakshi now is in the Bihar Museum in Patna.
Source: Class XII NCERT Fine Arts - Page no 20
Nitin Singhania-Indian Architecture
https://indianculture.gov.in/snippets/didarganj-yakshi

Q.17) With reference to craft traditions of India, consider the following pairs:

Types of pottery	:	**Region**
1. Khurja pottery	:	Gujarat
2. Longpi pottery	:	Manipur
3. Khavda pottery	:	Uttar Pradesh
4. Dal Gate pottery	:	Jammu and Kashmir

How many pairs given above are correctly matched?
a) only one pair
b) only two pairs
c) only three pairs
d) All the four pairs

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Ans) b

Exp) Option b is the correct answer.

Pottery is among the most important living craft traditions of India, especially rural India. This art provides livelihood to many of the people in rural areas.

Pair 1 is incorrect: Khurja pottery is traditional Indian pottery manufactured in **Khurja of the Bulandshahr district in Uttar Pradesh**. Khurja is one of the **oldest centres for glazed pottery in India.** The pottery was made using clay **churning, moulding, colouring and followed by glazing.**

Pair 2 is correct: Longpi pottery originated in the Longpi villages of Ukhrul district of Manipur. It was made from **black serpentine stone and a form of clay** which is found only in this area, the classic black exterior with **bamboo woven around handles** give it a unique identity.

Pair 3 is incorrect: The Khavda pottery originated in the village of Kahavda, Rann of Kutch of Gujarat. It was made using a **special mud** which was procured from near a lake.The beautiful ochre/gerua shades give this art form an earthy feel with painted symmetric black and white designs.

Pair 4 is correct: Dal Gate pottery also known as Glazed pottery is unique to Kashmir. The items are made in the normal manner using **clay**. They are given a **glazed finish**. Usually strong shades such as **blue, yellow, green and brown are used.**

Source: https://indianexpress.com/article/lifestyle/art-and-culture/pottery-types-timeless-craft-tradition-eco-friendly-khurja-khavda-longpi-6090985/
https://indianexpress.com/article/lifestyle/art-and-culture/kashmiri-youth-striving-to-revive-dying-glazed-pottery-craft-working-on-bulk-order-for-diwali/

Q.18) With reference to the Nataraja sculpture, consider the following statements:
1. It represents Shiva as the creator, preserver, and destroyer of the universe.
2. Among other things, the sculpture symbolises the path of salvation.
3. The snake in this sculpture represents the ignorance and ego of an individual.
Which of the statements given above is/are correct?
a) 1 and 2 only
b) 2 only
c) 1 and 3 only
d) 1, 2 and 3

Ans) a

Exp) Option a is the correct answer.

An important piece of Chola sculpture was the **sculpture of Nataraja in the Tandava dance posture.** Though the **earliest known Nataraja sculpture** had been excavated at **Ravana phadi cave at Aihole,** was made during the **early Chalukya rule**, the sculpture reached its **peak under the Cholas.**

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Statement 1 is correct: Nataraja is a depiction of the Hindu god Shiva in his form as the cosmic dance. It combines in a single image, the Shiva's role **as creator, preserver, and destroyer of the universe and conveys the Indian conception of the never-ending cycle of time.**
Statement 2 is correct: The **lower left hand which points towards the upraised foot indicates the path of salvation.** The lower right hand is raised in the gesture of Abhay mudra signifying benediction and reassuring the devotee to not be afraid.
Statement 3 is incorrect: The snake symbolises the kundalini power, which if aroused, one can attain **true consciousness.** Kundalini power is believed to reside in the human spine in the dormant stage. T**he figure of a small dwarf symbolises ignorance and the ego of an individual.**
Source: Nitin Singhania - Indian Architecture

Q.19) With reference to Sarit Sarak, consider the following statements:
1. It is an armed martial art using sword and spear.
2. It is one of the main aspects of Manipuri martial art Huyen Langlon.
3. It is practiced by the Meitei people of Manipur.
Which of the statements given above are correct?
a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) 1, 2 and 3

Ans) b
Exp) Option b is the correct answer.
Sarit Sarak is martial art of Manipur. Its origin can be traced back to 17th century.
Statement 1 is incorrect: Sarita sarak is an unarmed art form that uses hand-to-hand combat. It is different from other martial art forms. As when compared to any other existing art form of the same school, it is quite flawless for its offensive and evasive action.
Statement 2 is correct: Thang Ta and Sarit Sarak are two of the main aspects of the Manipuri martial art form of Huyen langlon. Thang-ta is an armed martial art whereas Sarit Sarak is an unarmed combat.
Statement 3 is correct: Sarit Sarak has been created by the Meitei people of Manipur. It was in 17th century when Manipuri kings used it to fight the British king for sometimes. Britishers put a ban on it when they captured this region. However post-independence it resurfaced.
Source: Nitin Singhania, chapter on Martial Art in India

Q.20) Which of the following options correctly describes the term 'zombie viruses', recently seen in the news?
a) It is a potentially infectious pathogen.
b) It is a cyber-attack made on the power grid.
c) It is a weapon of mass destruction allegedly used in Russia-Ukraine war.
d) It is a recent mutation in SARS Covid-19 virus.

Ans) a
Exp) Option a is the correct answer.
Option a is correct: 'Zombie viruses describes a virus that is **frozen in ice and therefore dormant**. Zombie viruses have **been dormant for many years** due to being trapped inside the ice and have **come to life after the ice melted**. European researchers have found 13 zombie viruses from the Siberian permafrost. One of the viruses is named **as Pandoravirus Yedoma** after the mythological character Pandora.

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Due to **climate change, permafrost thawing** is releasing organic matter, which also consists of viruses as well as cellular microbes. These viruses **are potentially infectious** and hence, pose danger to the human health.
Source: https://blog.forumias.com/zombie-virus-see-50000-years-old-virus-found-in-siberia/

Q.21) What is/are common to the two historical places known as Ajanta and Mahabalipuram?
1. Both were built in the same period.
2. Both belong to the same religious denomination.
3. Both have rock-cut monuments
Select the correct answer using the code given below.
a) 1 and 2 only
b) 3 only
c) 1 and 3 only
d) None of the statements given above is correct

Ans) b
Exp) Option b is the correct answer.
Statements 1 and 2 both are incorrect. Ajanta caves date from the 2nd century BCE to about 480 or 650 CE.
Most of the monuments at Mahabalipuram are attributed to 7th century.
The caves at Ajanta are dedicated to Buddhist religion. While, the temples at Mahabalipuram belong to Hindu religion.
Statement 3 is correct. The Caves in Ajanta are **approximately 30 rock-cut** Buddhist cave monuments dating from the 2nd century BCE to about 480 CE.
Mahabalipuram group of monuments there consists of **rock-cut cave temples,** monolithic temples, bas-relief sculptures, and structural temples as well as the excavated remains of temples.
Source: UPSC 2016

Q.22) With reference to the contributions of Brahmagupta, consider the following statements:
1. He described the use of negative numbers in his book 'Brahmasputa Siddhantika'.
2. The cyclic method of solving algebraic equation was introduced by him.
Which of the statements given above is/are correct?
a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

Ans) a
Exp) Option a is the correct answer.
Brahmagupta (7th century AD) wrote book named Brahmasputa Siddhanta. His contribution holds a unique position in the history of Indian mathematics.
Statement 1 is correct: In his book called Brahmasputa Siddhantika, he described the use of negative numbers and described them as debts and positive numbers as fortune.
Statement 2 is incorrect: The cyclic method to solve algebraic equations was introduced by Bhaskaracharya in his book Lilavati. Brahmasputa Siddhanta by Brahmagupta contained first clear description of Quadratic formula.
Knowledge Base:

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Theorems given by Brahmagupta resulted in the calculation of circum-radius of a triangle and lengths of the diagonals of a cyclic quadrilateral, construction of a rational cyclic quadrilateral and integer solutions to a single second-degree equation were ground breaking.
Source: https://egyankosh.ac.in/bitstream/123456789/67726/1/Unit-16.pdf

Q.23) With reference to Martial arts in India, consider the following statements:
1. Kirip is an indigenous form of Sword fighting that is popular in Rajasthan.
2. Thoda martial art relies on archery skills of players.
3. Kalaripayattu was banned during British rule in India.
Which of the statements given above are correct?
a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) 1, 2 and 3

Ans) b
Exp) Option b is the correct answer.
Martial art means 'art associated with the waging war.' India is a land of diverse culture and ethnicities. Wide variety of martial arts have been developed since the ancient times.
Statement 1 is incorrect: Kirip is an indigenous form of wrestling quite popular with the Nicobarese tribe. In this sport, before the bout begins, wrestlers grip each other from behind with their hands, and this grip is not to be slackened till the very end of the competition. The wrestler, using various parts of the body, including the leg, tries to thrust the opponent to the ground. If a contestant's back touches the ground, he is declared the loser.
Statement 2 is correct: Thoda martial art originated in the state of Himachal Pradesh. The sport demands excellent expertise in archery. The main weapons needed for Thoda are bows and arrows. It takes place during Baisakhi every year.
Statement 3 is correct: Art forms like Kalaripayattu and Silambam were banned during the British rule. The ban on Kalaripayattu was due to fear of revolution. It resulted in sudden decline of Kalaripayattu. In the late 20th century, the practice of kalarippayattu resurfaced. It gradually gained popularity as part of promoting traditional art forms in South India.
Source: Nitin Singhania, chapter on Martial arts in India

Q.24) Which of the following architectural features can be found in the Ellora Caves?
1. The 24 feet long sculpture representing Buddha in a reclining form.
2. The sculpture of the seated Buddha with Bodhi tree in his background.
3. The sculpture of the Jain leader Bahubali.
4. The sculptures associated with Tantric Buddhism.
Select the correct answer using the code given below:
a) 1 and 2 only
b) 3 and 4 only
c) 2, 3 and 4 only
d) 1, 2, 3 and 4

Ans) c
Exp) Option c is the correct answer.

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Ellora caves had been built around 600-1000 AD by various guilds from Vidarbha, Karnataka and Tamil Nadu. Hence, the caves reflect a natural diversity in terms of theme and architectural styles. It is a **group of 34 caves – 17 Brahmanical, 12 Buddhist and 5 Jain.**

Statement 1 is incorrect: Reclining Buddha is located in the Ajanta caves. It is a popular iconographic depiction in Buddhism and is meant to show that all beings have the potential to be awakened and be released from the cycle of death and rebirth. **Cave No. 26 of Ajanta cave** contains a **24-foot-long and nine-foot-tall sculpture** of the Reclining Buddha, believed to have been carved in the 5th century AD. **Statement 2 is correct:** Cave number 10 is a Buddhist Chaitya cave known as **Vishwakarma cave. Here** is the sculpture of a high **seated Buddha in Vyakhyana mudra (teaching posture) with a large Bodhi tree at his back.**

Statement 3 is correct: At Cave 32, **Gomateswara (also known as Bahubali)** was represented with creeping plants twining themselves round his limbs, snakes coming out of ant-hills at his feet, his hair falling over his shoulders and attended by worshippers. He is the **son of the first Tirthankara, Rishabhanatha (Adinatha).**

Statement 4 is correct: The Ellora cave **represents the idea of vajrayana and tantric form of Buddhism** by hosting **sculptures of numerous tantric buddhist goddess in the cave number 12.**

Source: https://indianexpress.com/article/explained/explained-the-reclining-buddha-and-his-various-other-depictions-in-art-7331149/#:~:text=Cave%20No.%2026%20of%20the%20UNESCO%20World%20Heritage%20Site%20of%20Ajanta%20contains%20a%2024%2Dfoot%2Dlong%20and%20nine%2Dfoot%2Dtall%20sculpture%20of%20the%20Reclining%20Buddha%2C%20believed%20to%20have%20been%20carved%20in%20the%205th%20century%20AD.

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Q.25) Consider the following statements regarding 'Open Radio Access Network' (Open RAN):

1. 'Radio Access Network' is used to connect individual wireless devices with other parts of the network.
2. Open RAN does not require antennas to transmit signals.
3. Open RAN is expected to increase telecom operator's network deployment costs.

Which of the statements given above is/ are correct?

a) 1 only
b) 1 and 2 only
c) 1 and 3 only
d) 2 and 3 only

Ans) a

Exp) Option a is the correct answer.

The Open RAN technology is considered as **critical to the 5G deployment**. The concept aims to provide **more open radio access** network architecture.

Statement 1 is correct: The Radio Access Network (RAN) provides the critical technology to connect users, including mobile phones or enterprises, to the mobile network over radio waves. In other words**, this technology uses cellular radio connections to link individual devices to the other parts of the network**. **A RAN with open interoperable interfaces is known as Open RAN**.

Statement 2 is incorrect: Similar to traditional RAN architecture, Open RAN will also require use of antennas. **These antennas transmit and receive signals to and from our smartphones** or other compatible devices. The **signal is then digitized in the RAN-base station and connected to the network.**

Statement 3 is incorrect: Open RAN would **reduce a telecom operator's network deployment cost** as it **is interoperable with other networks such as 4G.** It is also **scalable, agile** and best of networks with improved network performance using **artificial intelligence and machine learning**.

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Source: https://www.business-standard.com/podcast/technology/what-is-open-radio-access-network-open-ran-122051100101_1.html
https://www.ericsson.com/en/openness-innovation/open-ran-explained

Q.26) Rang Mahal cave has beautiful murals on the walls of the portico. This includes paintings of Bodhisattva Padmapani and Mushroom paintings. It is situated in which of the following ancient caves?
a) Elephanta caves
b) Bagh caves
c) Ellora caves
d) Udaigiri khandgiri caves

Ans) b
Exp) Option b is the correct answer.
Option a is incorrect. **The Elephanta Caves located near Mumbai are dominated by the Shaivite faith**. It is contemporary with Ellora, and its sculptures show slenderness in the body, with stark light and dark effects. Elephanta caves are Known locally as Gharapuri Caves, these were constructed about mid-5th to 6th centuries AD.
Option b is correct. The Bagh Caves, consisting of Buddhist mural paintings, are located 97 km from Dhar district of Madhya Pradesh. These rock-cut cave monuments are not natural but carved over a period of time during the ancient India mostly during the Satvahana period. Bagh caves consists of 5 caves. Most significant of the five caves is Cave No. 4**, commonly known as th****e Rang Mahal, meaning the Palace of Colours, where paintings on the wall and ceilings are still visible. This includes paintings of Bodhisattva Padmapani and Mushroom paintings.**
Option c is incorrect. Ellora caves are a group of 34 caves – 17 Brahmanical, 12 Buddhist and 5 Jain. These set of caves were developed during the period between 5th and 11th centuries AD (newer as compared to Ajanta Caves) by various guilds from Vidarbha, Karnataka and Tamil Nadu. Hence, the caves reflect a natural diversity in terms of theme and architectural styles.
Option d is incorrect. The rock-cut cave tradition in Odisha is represented by **Udaigiri-Khandagiri caves in the vicinity of Bhubaneswar**. These caves are scattered and have inscriptions of Kharavela Jain kings. According to the inscriptions, the caves were meant for Jain monks.
There are numerous single-cell excavations. Some have been carved in huge independent boulders and given the shape of animals. The big caves include a cave with a pillared veranda with cells at the back. The upper part of the cells is decorated with a series of chaitya arches and narratives that still continue in the folklores of the region.
Source: Introduction to Indian art. Part 1. Class 11th and art and culture by nitin singhnia

Q.27) An Indian text called 'Sharangdhar Samhita' mainly deals with:
a) Ayurveda
b) Astrology
c) Chariot making
d) Sculpture

Ans) a
Exp) Option a is the correct answer.
Acharya Sarangdhara has written popular treatise on **ayurvedic medicine** in the 13th century with name Sharangdhara Samhita. It originated from the concept of simplification of ayurvedic treatises. This Samhita primarily focuses on pharmacology and pharmaceutical methods in Ayurveda. Sharangadhara Samhita has total of 32 chapters having 2600 verses divided in 3 parts.

The speciality of book includes the detailed classification of diseases. The Samhita emphasised on the use of opium in medicines and for urine examination in laboratories.
Source: Nitin Singhania, Science and Technology through the ages.
https://www.easyayurveda.com/2016/11/02/sharangdhara-samhita/amp/

Q.28) With reference to the development of chemistry in India, consider the following statements:
1. 'Rasaratnakara' by Nagarjuna contains the method of preparing chemical compounds.
2. Portuguese were the first to introduce the process of paper making in India.
Which of the statements given above is/are correct?
a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

Ans) a
Exp) Option a is the correct answer.
In India, Chemistry was called Rasayan Shastra, Rasatantra, Rasa Vidya and Rasakriya, all of which means science of liquids. Chemical laboratories were called Rasakriya Shala and a chemist was referred to as rasadanya.
Statement 1 is correct: Rasaratnakara is a book on chemistry written by Nagarjuna. It mainly deals with preparation of chemical compounds like compounds of mercury. The book also emphasised on the survey of metallurgy and alchemy.
Statement 2 is incorrect: Paper making was not first introduced in India by the Portuguese. In India, the first paper industry was developed in Kashmir, established by Sultan Zainul Abedin (Shahi Khan) of Kashmir in 1417-67 AD. It first replaced birch-bark and later palm-leaf. Hence, the use of paper begun in the medieval period. Kashmir, Patna, Murshidabad, Ahmedabad, Aurangabad, Mysore, etc. were well known centres of paper production. The process of paper making was almost same throughout the nation.
Source: Nitin Singhania, science and technology
https://indianexpress.com/article/parenting/learning/genius-ancient-indians-inventors-damascus-steel-5553542/
https://egyankosh.ac.in/bitstream/123456789/73909/1/Unit-17.pdf
https://egyankosh.ac.in/bitstream/123456789/11141/1/Unit-2.pdf

Q.29) With reference to the origin of chess, consider the following statements:
1. The game of chess was spread from India to other parts of the world.
2. Chess is mentioned in the Harshacharita written by Banabhatta.
3. The original chess game was played on 64 squares board.
Which of the statements given above is/are correct?
a) 1 and 2 only
b) 2 and 3 only
c) 1 only
d) 1, 2 and 3

Ans) d
Exp) Option d is the correct answer.
Chess is a game of strategy made up of different elements played on a chequered board. The game was known as "Chaturanga" in India, meaning four bodies. It was played with counters and Aksha (dice).

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Statement 1 is correct: The game of chess (Chaturang in India) was first introduced in Persia from India (known as Shatranj). Later, when Persia was conquered by the Arabs, the game quickly spread all over the Middle East and then to Europe. The game travelled to Persia from India, and there have been references to the game as early as 600 A.D in a Persian manuscript. Persia is from where the Arabs took it to the Islamic world. The game became 'Chatrang' in Persian and 'Shatranj' in Arabic.

Statement 2 is correct: The mention of chess is there in the **Harshacharita composed by Banabhatta (a biography of Indian Emperor Harsha - 606 to 647 BCE) in Sanskrit.** There was a reference to the ashatapada board used in Chaturanga i.e., predecessor of chess.

Statement 3 is correct: The original game was played on **64 squares board called ashtapada**. With a king board piece and pieces of four other types, corresponding to the corps of the ancient Indian army – an elephant, a horse, a chariot, or ship and four footmen.

Knowledge Base:

Chaturanga finds its mention in the famous epic Mahabharata where this game was played between Kauravas and the Pandavas.

Source: Nitin Singhania, science and technology

https://egyankosh.ac.in/bitstream/123456789/84066/1/Unit-2.pdf

https://www.esamskriti.com/e/Culture/Indian-Culture/Origin-of-chess-aka-Chaturanga-1.aspx

https://artsandculture.google.com/story/a-game-of-thrones-how-chess-conquered-the-world-salar-jung-museum/fgUhNlxUQVZ2Kg?hl=en

Q.30) Consider the following statements regarding the 'base editing' technology:

1. It is a method of converting or altering a DNA base by creating double-stranded breaks.
2. It can be used only to edit DNA bases and not the RNA bases.
3. This technique generates lesser undesired editing by-products than the CRISPR-mediated genome editing methods.

Which of the statements given above is/ are **incorrect**?

a) 2 only
b) 1 and 2 only
c) 3 only
d) 1, 2 and 3

Ans) b

Exp) Option b is the correct answer.

Statement 1 is incorrect: Base editing is a newer genome editing approach that uses components from CRISPR systems together with other enzymes to **directly install point mutations into cellular DNA or RNA**. This technique **does not require making double-stranded DNA breaks (DSBs).**

Statement 2 is incorrect: The base editing technology can be used to alter base pair of both- DNA and the RNA.

Statement 3 is correct: Base editing is a method of directly converting one DNA base to another **without the need for double-stranded breaks**. But **CRISPR-mediated genome editing** uses the CRISPR-Cas9 system to **create double-stranded breaks (DSBs) in the DNA. These breaks are then repaired by the cell's own repair mechanisms,** leading to the insertion or deletion of specific base pairs. DSBs created by nucleases such as Cas9 result **in indels, translocations, and rearrangements that are considered as undesirable by-products. Since base editors (in base editing) do not normally create DSBs, they minimize the formation of DSB-associated by-products.**

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6535181/

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Q.31) With reference to the cultural history of India, consider the following statements:
1. White marble was used in making Buland Darwaza and Khankah at Fatehpur Sikri.
2. Red Sandstone and marble were used in making Bara Imambara and Rumi Darwaza in Lucknow.
Which of the following statements given above is/are correct?
a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2

Ans) d
Exp) Option d is the correct answer.
Statement 1 is incorrect. Buland Darwaza or the "Door of Victory", was built in 1602 A.D. by Mughal emperor Akbar to commemorate his victory over Gujarat. The Buland Darwaza is made of **red and buff sandstone, decorated by black marble.**

Buland Darwaza
Statement 2 is incorrect. Bara Imambara, also known as Asfi Imambara is an imambara complex in Lucknow, India built by Asaf-ud-Daula, Nawab of Awadh in 1784. **Brick and lime were used in construction of Bara Imambara and Rumi Darwaza**. The roof of Imambara is made up from the rice husk which makes this Imambara a unique building. Rumi Darwaza massive gate is situated between Bara Imambara and Chota Imambara.

Rumi Darwaza
Source: UPSC 2018

Q.32) According to Charak, which of the following are the 'Doshas' on which the proper functioning of a human body depends?
1. Pitta

2. Kapha
3. Blood
4. Vata
5. Marrow

Select the correct answer using the code given below:

a) 1, 2 and 3 only
b) 2, 4 and 5 only
c) 1, 2 and 4 only
d) 3, 4 and 5 only

Ans) c

Exp) Option c is the correct answer.

Option 1, 2 and 4 are correct: While Charaka studied all parts of medicine, including the logic and philosophy underlying the Indian medical system. He placed a **specific focus on illness diagnosis and regarded Ayurveda as a holistic system** of health care that addressed both preventative and curative elements. He also elaborated on topics such as foetal production and development, physiology of the human body and function and malfunction of the body. In Charak Samhita, extensive note on digestion, metabolism and immune system is written.

According to Charaka, a body works because it has three doshas or principles: movement (Vata), transformation (Pitta), and lubrication and stability (Kapha). These doshas correspond to the Western categorization of wind, bile, and phlegm. **They are created when dhatus (blood, flesh, and marrow) interact with the food consumed. They** can lead to diseases if these doshas are in disequilibrium state**.** However, for the same amount of food consumed, one body creates dosha in a different amount than another. That is why one body differs from another.

Option 3 and 5 are incorrect: According to Charaka, blood, flesh and marrow are the dhatus which create the Doshas by interacting with the food consumed. Hence these are not the Doshas in themselves but they create the Doshas in human body.

Source: Nitin Singhania, chapter on science and technology

Q.33) Consider the following pairs regarding cloth printing in India:

Fabric Printing	**Description/Features**
1. Ajrakh	It is a block-printed textile that uses resist-dyeing technique.
2. Thigma	It is a tie resist printing that uses natural substances to colour the cloth.
3. Dabu	It is a mud resist hand block printing technique done on cotton fabric.
4. Paagadu Bandhu	It is a tie and dye technique of Andhra Pradesh

How many pairs given above are correct?

a) One pair only
b) Two pairs only
c) Three pairs only
d) All four pairs.

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Ans) d

Exp) Option d is the correct answer.

There are various types of handicraft techniques that are used on cloth like weaving and printing.

Pair 1 is correct: Ajrakh **is a block-printed textile that includes resist-dyeing technique using natural dyes, including indigo and madder.** It is done mainly by Khatri Community in Kutch region. Traditionally, Ajrakh is the name of a block printed cloth with deep crimson red and indigo blue background. It bears symmetrical patterns with interspersed unprinted sparkling white motifs. It is a Portrait painting mainly themed around lord Krishna on a cloth or a paper.

Resist dyeing is a method of colouring yarn or fabric in order to create a pattern by resisting certain areas, so that only the unblocked areas receive colours. Resist materials including thread, wax, rice or mud paste are used in this dyeing process based on the patterns.

Pair 2 is correct: Thigma is tie resist printing based in Jammu and Kashmir. It uses natural ingredients to colour the woollen cloth such as soot is used for grey and apple bars and onion peels for brown.

Pair 3 is correct: Dabu is an ancient mud resist hand block printing technique used on cotton fabric. It is done in Chittorgarh area of Rajasthan. Mud resist is a textile printing technique with mud and indigo dye. The process is completed in three steps:

I)Printing the cloth with mud

II)Dipping the cloth in indigo

III)Finally washing off the mud to reveal the printed design on the textile.

Pair 4 is correct: Paagadu Bandhu is a tie and dye method done in Andhra Pradesh. It is also known by an Indonesian name Ikat. In this tie- dye process, the fabric is woven first, resist bindings are then applied to the fabric which is then dyed**. Dhalapathar Parda and fabric is handcrafted by Rangani Community of Odisha.**

Source: Nitin Singhania, Indian Handi crafts

https://indianculture.gov.in/textiles-and-fabrics-of-india/type-of-textile/dyeing

Q.34) With reference to the evolution of rock cut architecture in India, consider the following statements:

1. Rock-cut Cave architecture became popular during Mauryan Period.
2. Painting on the walls of the Cave became popular during the reign of Guptas.
3. Kailash temple at Ellora is the earliest example of rock-cut temple in India.

Which of the statements given above are correct?

a) 1 and 2 only

b) 1 and 3 only

c) 2 and 3 only

d) 1, 2 and 3

Ans) a

Exp) Option a is the correct answer.

The emergence and decay of great empires and the confluence of different cultures and styles, etc. are all reflected in the **evolution of Indian rock cut architecture.**

Statement 1 is correct: Under the **influence of Buddhism, the rock-cut cave architecture became popular** during the Mauryan period. These caves were generally used as **viharas i.e., living quarters by the Buddhist monks.** The caves during Mauryan period were marked by a **highly polished finish of the interior walls and decorative gateways.**

Statement 2 is correct: During the Gupta period, the use of **mural paintings on the walls of the caves** became **popular**. Some of the finest examples of **mural paintings** can be found in the caves of **Ajanta.** The caves were developed in the period between **200 B.C. to 650 A.D.**

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Statement 3 is incorrect: In Mahabalipuram, Ratha temples or Pancha Ratha were built **around 7th century AD,** during the reign of **Pallava ruler Mahendravarman**. It was the **earliest rock-cut temple in India**. Under him, the temples were known as mandapas.
The Kailash temple is the largest of the rock-cut Hindu temples at the Ellora Caves, Maharashtra. It was built in 8 century A.D.
Source: Nitin Singhania: Chapter-Indian Art and Architecture

Q.35) Which one of the following statements is **not correct** regarding 'Gravitational lensing'?
a) It is a phenomenon that reflects the light coming from distant objects of the universe to Earth.
b) It was predicted to exist by Albert Einstein's General Theory of Relativity.
c) It provides for investigating the development of structure in the universe and the expansion of the universe.
d) It can be used to detect exoplanets and other celestial bodies that are not directly observable.

Ans) a
Exp) Option a is the correct answer.
Recently, NASA's Hubble Space Telescope has discovered the farthest star ever seen to date. They have nicknamed that star as "Earendel". This discovery of the most distant star was made possible by a phenomenon known as 'gravitational lensing'.
Statement a is incorrect: A gravitational lens can occur when a huge amount of matter, like a cluster of galaxies, creates a gravitational field that **distorts and magnifies the light from distant galaxies that are behind it but in the same line of sight.** The effect is like looking through a giant magnifying glass. The main effect of gravitational lensing is that it bends the light from a distant source, which can cause the object to appear distorted or magnified. **It does not reflect the light from distant objects.**
Statement b is correct: The phenomenon of gravitational lensing was **predicted to exist by Albert Einstein's General Theory of Relativity in the early 20th century**, and it was later observed in the 1920s. The theory of general relativity predicts that massive objects will bend the path of light, and this effect is known as gravitational lensing.
Statement c is correct: Gravitational lensing can be used to study the distribution of matter in the universe, including dark matter, which cannot be directly observed. By observing the distortion caused by a massive object, scientists can infer the **distribution of dark matter in the object and study the properties of distant galaxies and quasars**. This can give insight into the development of structure in the universe and how it has expanded over time.
Statement d is correct: One of the types of **gravitational lensing is microlensing**, which occurs when the lensing object is a single star or a binary star system. In this case, the light from a **background star is bent as it passes through the gravitational field of the lensing object**, causing the background star to appear brighter for a short period of time. This effect is known as a microlensing event, and can **be used to detect exoplanets and other celestial bodies that are not directly observable**. This is because the presence of a planet or other celestial body around a star can cause a small deviation in the microlensing event, which can be detected and used to infer the presence of the celestial body.
Source: https://blog.forumias.com/nasas-hubble-discovers-farthest-star-detected-till-date-earendel/
https://hubblesite.org/contents/articles/gravitational-lensing
https://earthsky.org/space/what-is-gravitational-lensing-einstein-ring/

Q.36) With reference to Silambam, consider the following statements:
1. It is majorly practised in Tamil Nadu.
2.Use of any other weapon except wooden staff is forbidden in Silambam.

3. This martial art is also practised outside India.
Which of the statements given above is/are correct?
a) 1, 2 and 3
b) 3 only
c) 1 only
d) 1 and 3 only

Ans) d
Exp) Option d is the correct answer.
Silambam is an Indian martial art originating in South India in the Indian subcontinent. It is a kind of staff fencing used for both mock fighting and self-defense.
Statement 1 is correct: Silambam stick fencing is a modern and scientific martial art of Tamil Nadu. Kings ruled in Tamil Nadu like Pandya, Chola and Chera had promoted during their reign. This was one of the highly organized and popular games of the state since the first century A.D.
Statement 2 is incorrect: The use of weapon in Silambam is not limited to wooden staff only. Silambam uses long staff and various kinds of **swords, knives and lances**.
Some of the most popular ways of Silambam are mentioned as follows -
1) Long Stick Guru Vanakkam - Here, the fighters use one-inch width bamboo stick as a weapon with a height up to their eyebrow level.
2) Double Short Stick - In this form, two different short sticks, each being 3 feet are used to hit or block the opponent.
3) **Chopper Knife** - The fighters in this form defend themselves with the aid of a chopper knife.

Statement 3 is correct: Silambam travelled to Malaysia where it is a famous sport apart from being a mode of self-defence. It is also practised by Tamil community of Sri Lanka and Malaysia.
Source: Nitin Singhania, chapter on Martial arts in India.
https://indianculture.gov.in/research-papers/influence-martial-arts-silambam-and-kalari-training-selected-motor-fitness
http://ccrtindia.gov.in/wp-content/fellowship_research_project/InfluenceofMartialArtsSilambamandKalariTrainingforSchoolBoys.pdf
https://sportsmatik.com/sports-corner/sports-know-how/silambam/rules

Q.37) "It is a form of wrestling, native to the people of Mizoram in India. It is said to have originated in the village of Dungtlang in 18th century. It involves very strict rules prohibiting kicking, stepping out of the circle and even bending of the knees." The martial art mentioned here is:
a) Naban
b) Mukna
c) Inbuan
d) Gatta Gusthti

Ans) c
Exp) Option c is the correct answer.
Inbuan is a form of wrestling native to the people of Mizoram in India. Inbuan is said to have originated in the village of Dungtlang in 1750.
Option a is incorrect: Naban is a traditional martial art of Myanmar. It involves seizing and holding the opponent. Many techniques of Naban martial art, is now adopted by various other fighting styles. Naban is especially popular among the Kachin and Chin tribes that have Himalayan origins.

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Option b is incorrect: Mukna is a form of folk wrestling from the north-east Indian state of Manipur. Holding the opponent's neck, hair, ear or legs with the hands is not permitted. Any strikes are also considered fouls. Anyone who touches the ground with any part of their body besides the feet is declared the loser.

Option c is correct: Inbuan is a form of wrestling native to the people of Mizoram in India. Inbuan is said to have originated in the village of Dungtlang in 1750. It was recognized as a sport after the Mizo people migrated from Burma to the Lushai Hills. Inbuan involves very **strict rules prohibiting kicking, stepping out of the circle and even bending of the knees**. The matches are held in three rounds each of 30–60 seconds of duration, the match generally continues till a wrestler either breaks a rule or is lifted off his feet.

Option d is incorrect: Gatta gusthi is a form of wrestling **practiced in Kerala**. It is competed inside an open ring on the ground, usually on a beach, known as godha. Wrestlers are called phayalvans. Gatta gusthi was popular in the state until the arrival of freestyle wrestling and karate in late 1960s. Its freestyle form is known simply as gusthi.

Source: Nitin Singhania, chapter on Martial Art in India

Q.38) With reference to Indian Handicrafts, which of the following is the correct description of 'Tikuli'?

a) It refers to a saree having embroidery with chariot and elephant motifs.

b) It is a type of metal embroidery which uses gold, silver or copper wires.

c) It refers to a particular type of decorative glass beads.

d) It is a kind of floor design consisting of geometric shapes.

Ans) c

Exp) Option c is the correct answer.

Tikuli refers to the decorative glass bead manufactured in Patna, Bihar.

Option a is incorrect: Ilkal saree a traditional form of sari which is worn in Karnataka state. Ilkal saris are woven using cotton warp on the body and art silk warp for border. It invoves use of Kasuti embroidery with chariot and elephant as common motifs.

Option b is incorrect: Zardozi is an embroidery of Uttar Pradesh. It uses gold, silver or copper wire with silver or golden polish and silk threads.

Option c is correct: Tikuli is a decorative glass bead which is made from broken glass. The craftsmen first melt the broken glass and then give is shape and design. Patna and Harihans cities are very famous for manufacturing of this craft. The chief markets of Tikuli are Banaras, Patna and Calcutta. This craft has been lost due to industrialisation. However, it is still worn by the santhal tribes of Bihar.

Option d is incorrect: Mandana is a kind of floor design of Rajasthan and Madhya Pradesh. The floor design consisting of geometric shapes like squares, hexagons, triangles and circles. For preparing mandana, ground is cleaned with cowdung and on several occasions finished with crimson red.

Source: Nitin Singhania, chapter on Indian Handicrafts.

Q.39) With reference to Ikat, consider the following statements:

1. Earliest reference to the Ikat fabrics can be found in the Ajanta Cave paintings.
2. Jaipur is the most important centre of Ikat work in India.
3. It is a type of tie and dye technique.

Which of the statements given above are correct?

a) 1 and 2 only

b) 2 and 3 only

c) 1 and 3 only

d) 1, 2 and 3

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Ans) c

Exp) Option c is the correct answer.

Statement 1 is correct: The ikat fabric's earliest mention in history is in the Ajanta cave paintings (6th-century A.D.) The designs and patterns closely resembling Ikat are seen on the dresses of the females portrayed in the murals of Ajanta.

It is a **yarn resist technique wherein the yarns are tie-dyed**, and on weaving, a pattern is created on the surface of the fabric.

Statement 2 is incorrect: Telangana, Odisha, Gujarat and Andhra Pradesh are the major centres of the Ikat work. The ikat of each region known by different names can be identified from the motifs and the patterns achieved by weaving the tie-dyed yarns.

Statement 3 is correct: The Ikat is a dyeing technique where fabric is tied and then dyed. In this method the resist dying on yarn is repeatedly applied before the cloth is woven.

Source: Nitin Singhania, chapter on Indian Handicrafts

https://yehaindia.com/tie-dye-techniques-in-india-bandhani-ikat-lehariya/

Q.40) With reference to 'Next-Gen Launch Vehicle (NGLV)', consider the following statements:

1. It is being developed to replace Polar Satellite Launch Vehicle.
2. It is featured semi-cryogenic propulsion with refined kerosene as fuel and liquid oxygen (LOX) as an oxidizer.
3. It will be used to take three Indian astronauts to the Earth's low earth orbit under the Gaganyaan mission.

Which of the statements given above is/are correct?

a) 1 only

b) 1 and 2 only

c) 2 and 3 only

d) 3 only

Ans) b

Exp) Option b is the correct answer.

Recently, addressing a three-day Engineers conclave 2022, the ISRO chairman has announced to launch Next-Gen Launch Vehicle (NGLV), which is-going to replace operational systems like the Polar Satellite Launch Vehicle (PSLV).

Statement 1 is correct: Next-Gen Launch Vehicle (NGLV) will replace the **Polar Satellite Launch Vehicle (PSLV) launch vehicle** and aimed to be more efficient than other launch vehicles of ISRO. Polar Satellite Launch Vehicle (PSLV) is the third generation launch vehicle of India. It is the first Indian launch vehicle to be equipped with liquid stages.

Statement 2 is correct: NGLV is aimed at a **cost-efficient, three-stage to orbit, reusable heavy-lift vehicle** with a payload capability of ten tonnes to Geostationary Transfer Orbit (GTO). It is featured with **semi-cryogenic propulsion (refined kerosene as fuel with liquid oxygen (LOX) as oxidizer)** for the booster stages which is cheaper and efficient.

Statement 3 is incorrect: The Gaganyaan mission will be ISRO's first manned space mission and will take three Indian astronauts, including a woman, on board the **Geosynchronous Satellite Launch Vehicle (GSLV) Mk III** to the Earth's low earth orbit.

Source: https://www.thehindu.com/sci-tech/science/isros-next-gen-launch-vehicle-may-assume-pslvs-role/article66005152.ece

https://www.thehindu.com/news/national/isro-eyes-next-generation-launch-vehicle-for-heavier-payloads/article66073553.ece

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Q.41) Which one of the following statements is correct?
a) Ajanta Caves lie in the gorge of Waghora river.
b) Sanchi Stupa lies in the gorge of Chambal River.
c) Pandu-lena Cave Shrines lie in the gorge of Narmada River.
d) Amaravati Stupa lies in the gorge of Godavari River.

Ans) a
Exp) Option a is the correct answer.
Option a is correct. The rock-cut caves of **Ajanta** lie in **Waghora river valley** near Ajanta village in the Aurangabad district of Maharashtra.
Option b is incorrect. **Sanchi** lies in an upland plateau region just west of the **Betwa** River.
Option c is incorrect. Pandu-lena caves is ancient rock-cut sculptures complex located at **Gomai** River.
Option d is incorrect. Amravati stupa is located in the gorges of **Krishna River**.
Source: UPSC 2021

Q.42) With reference to Ivory Crafting in India, consider the following statements:
1. During Harappan period, ivory objects were mainly the items of import.
2. Rig Veda do not have any mention of ivory objects.
3. There was a significant decline in the ivory craft during Mughal Period.
Which of the statements given above is/are **incorrect**?
a) 1 only
b) 2 and 3 only
c) 1 and 3 only
d) 1, 2 and 3

Ans) c
Exp) Option c is the correct answer.
Ivory carving has been prevalent in India since the Vedic period.
Statement 1 is incorrect: During the Harappan period, ivory and objects made of ivory like ivory dice, etc. **were exported from India to Turkmenistan, Afghanistan, and parts of Persian Gulf.** This has been proved by the recent excavations.
Statement 2 is correct: There are **no reference to ivory in the Vedic literature** (The Vedic literature consists of four Vedas, namely Rig Veda, Sama Veda, Yajur Veda, and Atharva Veda). However, epics like Mahabharata and Ramayana have several references to ivory.
Statement 3 is incorrect: During Mughal rule, many ivory artifacts were being used and no such decline is observed. For example, combs, dagger's handles and in other ornaments, ivory has been used.
Source: Nitin Singhania, Indian Handicrafts
https://egyankosh.ac.in/bitstream/123456789/16909/1/Unit-23.pdf

Q.43) With reference to the features of the Vijayanagar Temple Architecture, consider the following statements:
1. Absence of the use or construction of pillars
2. Building of more than one mandaps in each temple.
3. Multiple gopurams in the temple.
4. Water tanks, called Pushkaranis, were attached to the temple.

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Which of the statements given above are correct?
a) 1 and 2 only
b) 1, 3 and 4 only
c) 2 and 3 only
d) 2, 3 and 4 only

Ans) d
Exp) Option d is the correct answer.
The rulers of the **Vijayanagara Empire (1335-1565 AD)** were great patrons of art and architecture with capital at Hampi (Karnataka). They combined the features of Chola, Hoysalas, Pandyas, Chalukyas architectural styles.
Statement 1 is incorrect: Vijayanagar temple had monolithic rock pillars. Odisha School of temple architecture were developed in different parts of the Kalinga empire. In these, **there was no use of pillars; instead,** they used **Iron girders** to support the roof.
Statement 2 is correct: One of the unique features of **Vijayanagar temple** architecture is **building of more than one mandaps** were built in each temple. The **central mandap came to be known as kalyan mandap.**
Statement 3 is correct: The notable feature of **Vijayanagar temples** is of **multiple gopurams in its temple.** Gopurams, which were previously present on the front side of the temple, **were now built on all the sides.**
Statement 4 is correct: Pushkaranis are sacred water tanks attached to temples of Vijayanagar period. For example, most of the large temples in **Hampi** has a tank attached to it. Also, **Vittala Temple, Virupaksha Temple** of Vijayanagar empire have water tanks associated with it.
Knowledge Base:
The features of the Vijayanagara temples were
1) The walls of the temples were highly decorated with carvings and geometrical patterns.
2) Monolithic rock pillars
3) Generally, temple pillars have a mythical creature Yali (Horse) engraved in them
4) Temple complex is enclosed by boundaries and the enclosing walls were larger
5) More than one mandapas were built in each temple. The central mandap came to be known as kalyan mandap.
6) The concept of secular buildings inside the temple premises was also introduced during this period.
Source: Nitin Singhanai: Chapter - Indian Architecture
https://hampi.in/pushkarani

Q.44) With reference to the art and archaeological history of India, consider the following pairs:

Caves	**Known for**
1. Ajanta	The Mahaparinirvana sculpture of Buddha
2. Elephanta	The sculpture of Trimurti
3. Badami	The mural paintings of Jain tirthankara
4. Barabar	The Hathigumpha Inscriptions of King Kharavela

How many pairs above are correctly matched?
a) Only one pair
b) Only two pairs
c) Only three pairs

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d) All four pairs

Ans) c

Exp) Option c is the correct answer.

Pair 1 is correct: All 29 caves in Ajanta are Buddhist caves. Some prominent **sculptures** of Ajanta Caves are: **Mahaparinirvana of Buddha** in Cave.no 26 and **Naga king and his consort in Cave.no 19**. Also, the **painting** of **Bodhisattva Padmapani** is one of the most famous and oft-illustrated paintings at Ajanta caves.

Pair 2 is correct: Trimurti also known as Sadashiva and Maheshmurti is in the Elephanta Caves. It is located in Western India on Elephanta Island and it was constructed during the mid-**5th to 6th centuries AD. The 7-meter-high masterpiece "Sadashiva"** dominates the entrance to **Cave 1.** The sculpture represents **three aspects of Shiva: the Creator, the Preserver, and the Destroyer.**

Pair 3 is correct: The mural paintings in **Badami caves** were completed during the period of **King Mangalishwara, son of Pulakesin I, the chalukya ruler.** The **Cave number 4 has a mural painting of Adinatha**, the **Jain tirthankara.** It also houses the earliest surviving mural painting of Hindus largely inspired from the puranas, the most being the paintings of **Shiva and Parvathi.**

Pair 4 is incorrect: The **Hathigumpha Inscription is found in the Udayagiri Khandagiri Caves, Odisha. The Barabar caves** in Gaya district Bihar, hosts the **Vadathika Cave Inscription** or the **Nagarjuni Hill Cave Inscription of Anantavarman**. The inscription is notable for including **symbols for Om in Gupta era.**

Source: https://whc.unesco.org/en/list/244/

Nitin Singhania: Chapter-Indian Architecture

Q.45) Which of the following were the reasons for end of Mangalyaan Mission, that was announced recently by Indian Space Research Organization (ISRO)?

1. Damage to the critical communication instruments by solar flare impact
2. Drain of Satellite battery due to longer eclipse period
3. Satellite's propulsion system ran out of fuel
4. Destabilization of the satellite due to gravitational pull of the Sun.

Select the correct answer using the codes given below:

a) 1 only

b) 2 and 3 only

c) 1, 2 and 4 only

d) 3 and 4 only

Ans) b

Exp) Option b is the correct answer.

Recently, Indian Space Research Organization (ISRO) confirmed that the **Mars Orbiter craft has lost communication and is non-recoverable and the Mangalyaan mission** has attained end-of-life. Despite being designed for a life-span of six months as a technology demonstrator, the Mars Orbiter Mission (MOM) has lived for about eight years in the Martian orbit.

Statement 2 and 3 is correct: The reason for the end of MOM mission can be attributed to:

1) **Propellant (fuel) exhaustion** the desired altitude pointing could not be achieved for sustained power generation and it lost communication from the ground station.
2) Recently there were **back-to-back eclipses** including one that **lasted seven-and-half hours** because that satellite has consumed all the propellant on board. As the satellite battery is designed to handle **eclipse duration of only about one hour and 40 minutes,** a longer eclipse would drain the battery beyond the safe limit.

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Statement 1 and 4 are incorrect: The damage to the critical communication instruments by solar flare impact and destabilization of the satellite due to gravitational pull of the Sun were not the reason for the end of Mars Orbiter Mission.
Source: https://timesofindia.indiatimes.com/home/science/mars-orbiter-craft-non-recoverable-mangalyaan-mission-over-confirms-isro/articleshow/94627138.cms
https://indianexpress.com/article/technology/science/mars-orbiter-craft-non-recoverable-mangalyaan-mission-over-confirms-isro-8188234/

Q.46) With reference to the potteries found in the ancient India, consider the following statements:
1. There was no evidence of pottery throughout the Neolithic age.
2. There was no evidence of wheel made pottery in the Indus Valley Civilization
3.The pottery of the Mauryan times was characterised by black paint and highly lustrous finish.
Which of the statements given above is/are correct?
a) 1 and 3 only
b) 2 and 3 only
c) 3 only
d) 1 and 2 only

Ans) c
Exp) Option c is the correct answer.
Potteries being the popular art practised by common people in ancient time, serves as one of the most important sources to study the history of India.
Statement 1 is incorrect: Pottery was found to be used in the Neolithic Period.
Statement 2 is incorrect: Most of the pottery that have been found in Indus valley civilization are very **fine wheel-made wares, with a very few being handmade**. The pottery found at the Indus valley civilisation are broadly classified into two kinds- **plain pottery and painted pottery**. The painted pottery is also known as **Red and Black pottery.**
Statement 3 is correct: Pottery of the **Mauryan period** were **characterised by the black paint and highly lustrous finish (shiny)** and were generally used as luxury items. These potteries were associated with the **Mahajanapada and Mauryan periods.**
Source: Class XI: TN SCERT- Early India: Te Chalcolithic, Megalithic, Iron Age and Vedic Cultures

Q.47) With reference to the Mathura and Gandhara school of sculpture, consider the following statements:
1. Mathura school was developed indigenously while Gandhara school was influenced by the Greeks.
2. The sculptures of Mathura school were made using red sandstone while the Gandhara school used white marbles only.
3. Both the Mathura and Gandhara schools were influenced by Buddhism, Jainism and Hinduism.
4. Both Mathura and Gandhara school were patronised by Kushana rulers.
Which of the statements given above are **incorrect?**
a) 1 and 4 only
b) 2 and 3 only
c) 2, 3 and 4 only
d) 1, 2, 3 and 4

Ans) b
Exp) Option b is the correct answer.

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After the **decline of the Mauryan Empire in the 2nd century BC,** small dynasties sprang up in various parts of India. Under them, different schools of sculpture emerged and the **art of sculpture reached its climax in the post-Mauryan period.**

Statement 1 is correct: Gandhara school developed on the **North West Frontier**, in the modern-day area of **Kandahar**, the **heavy influence of Greek or Hellenistic Sculpture** is visible. Hence it is also known as Indo Greek art. Whereas the **Mathura school of art** being developed in the Mathura region was **developed indigenously** and not influenced by external cultures.

Statement 2 is incorrect: The **Gandhara School used bluish-grey sandstone** in its early phase and mud and **stucco** in later phase. The sculptures of **Mathura School** were made using spotted **red sandstone**.

The **white marbles were actually used by the Amaravati School** prevalent in Andhra Pradesh region.

Statement 3 is incorrect: The **Gandhara school was mainly influenced by Buddhism** whereas **Mathura** school was influenced by the three major religions at that time - **Buddhism, Hinduism and Jainism.**

Statement 4 is correct: Both Mathura and Gandhara schools were patronised by Kushana rulers. Kanishka was the greatest emperor of the Kushan dynasty, under whose reign the empire reached its zenith he ruled from 127–150 A.D.

Source: Nitin Singhania- Indian Architecture

Q.48) With reference to the temple architecture of Pallava Dynasty in medieval India, consider the following statements:

1. Pallava rulers built both rock cut temples and structural temples.
2. The temples built by them were devoid of any sculptures.
3. Shore temple at Mahabalipuram was built using granites.
4. The art of Gopuram reached its climax under the Pallavas.

Which of the statements given above are correct?

a) 1 and 3 only
b) 1, 3 and 4 only
c) 2 and 4 only
d) 1, 2 and 3 only

Ans) a

Exp) Option a is the correct answer.

Dravidian style of temple architecture was started during the pallava dynasty and reached its zenith under Cholas. The temples developed during the Pallava dynasty reflected the stylistic taste of the **individual rulers** and can be classified into **four stages namely Mahendra group, Narasimha group, Rajasimha group and Nandivarman group.**

Statement 1 is correct: Under the **Pallavas both rock cut and structural temples were developed.** Under **Mahendravarman**, temples built were basically **rock-cut temples**. Another Pallava ruler **Rajsimhavarman** started the **development of real structural temples** in place of rock-cut temples.

The **Kailasanatha temple in Kanchi** was considered the best examples of **Pallava structural temples.**

Statement 2 is incorrect: The Pallavas had also aided in the **advancement of sculpture.** Beautiful sculptures adorn the walls of their temples. The sculpture at Mamallapuram depicting the "**Descent of Ganges or the Penance of Arjuna**" was considered as one of the Indian masterpieces.

Statement 3 is correct: The Pallava King **"Narasimhavarman II (RajaSimha)** the successor of Mahendravarman I, built Shore temple in Mahabalipuram (Mamallapuram) **out of granite**. It was considered a good example of the **first phase of structural temples constructed in the Dravidian style of architecture.**

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Statement 4 is incorrect: The **art of gopuram reached its climax in the Nayaka style of architecture** which was prominent in the region of Madurai. The Meenakshi temple in Madurai has the tallest gopuram in the world.
Source: Nitin Singhania: Chapter - Indian Architecture
https://www.incredibleindia.org/content/incredibleindia/en/destinations/mamallapuram/shore-temple.html

Q.49) With reference to the temple architecture in Eastern India, consider the following statements:
1. Unlike the Dravidian temples, temples in Odisha did not have boundary walls.
2. The Ahom style prevalent in Assam is a result of the confluence of architectural style of Burma and Palas.
3. Unlike in the Odisha style, the temples in Bengal region did not have tall curving shikhara.
Which of the statements given above is/are correct?
a) 1 and 2 only
b) 2 and 3 only
c) 2 only
d) 3 only

Ans) c
Exp) Option c is the correct answer.
Eastern Indian temples include those found in the **NorthEast, Bengal and Odisha**. Each of these three areas produced distinct types of temples.
Statement 1 is incorrect: Odisha temples usually have boundary walls. For instance, the **Sun temple at Konark, Odisha** is set on a high base and is surrounded by huge boundary walls. Its walls were covered in extensive, detailed ornamental carving.
Statement 2 is correct: In Assam a unique regional style emerged during the 12th and 14th centuries. **The Ahom style** prevalent in Assam is a result of **combination of the Tai styl**e (which arrived with the **Tais from upper Burma)** and the prevalent **Pala style of Bengal.**
Statement 3 is incorrect: The **Pala and Sena School of Architecture were prevalent in the Bengal region** under the reign of Palas and Sena respectively between **9th-13th century A.D**. Similar to the Odisha School, t**he temples of this region had a tall, curving shikhara crowned by a large amalaka.**
Source: https://ncert.nic.in/textbook/pdf/kefa106.pdf

Q.50) With reference to 'Cordy Gold Nanoparticles', sometimes mentioned in the news, consider the following statements:
1. It is derived from the synthesis of bacteria and gold salts.
2. It is used for faster drug delivery in human body.
3. It can be effective in treating certain kind of cancer.
Which of the statements given above is/are correct?
a) 1 only
b) 1 and 2 only
c) 2 and 3 only
d) 1 and 3 only

Ans) c
Exp) Option c is the correct answer.
Recently, scientists from four Indian institutions, including Bodoland University, have developed Cordy Gold Nanoparticles (Cor-AuNPs), which can make drug delivery in the human body faster and surer.

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Statement 1 is incorrect: Cordy Gold Nanoparticles (Cor-AuNPs) are derived from the **synthesis of the extracts of Cordyceps Mlitaris and Gold Salts.** Cordyceps militaris is a **high value parasitic fungus**, lab-grown at the Department of Biotechnology's Technology Incubation Centre (TIC) in Bodoland University. Wild Cordyceps mushroom are found in the eastern Himalayan belt. Gold salts are ionic chemical compounds of gold generally used in medicine.

Cordy Gold Nanoparticles (Cor-AuNPs)

Statement 2 is correct: Cordyceps militaris, called super mushroom because of its tremendous medicinal properties, adds bioactive components to the synthesis of gold nanoparticles **for better penetration in the cells of human body leading to faster and effective drug delivery**.

Statement 3 is correct: Cordyceps-gold nanoparticles (Cordy-AuNPs) have been found to have antimicrobial, antioxidant, anti-inflammatory and anti-cancer properties. Gold nanoparticles plays vital role in the development of the **anticancer drugs**. The gold nanoparticles with C. Militaris is proved to be an efficient chemotherapeutic drug against the hepatocellular carcinoma (Liver Cancer) cells.

Source: https://www.thehindu.com/sci-tech/science/gold-gets-nano-boost-from-super-mushroom-for-better-drug-delivery/article66090620.ece#:~:text=Photo%3A%20Special%20Arrangement-,Assam's%20Bodoland%20University%20is%20part%20of%20collaborative%20research%20on%20a,super%20mushroom%20for%20greater%20efficacy.

https://pubmed.ncbi.nlm.nih.gov/31304798/

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